

**Coplanar patch antenna with tilted-beam radiation for pattern steerable applications**

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Abstract

A design of generating tilted beam radiation from microstrip antennas is described in this paper. The antenna has a coplanar annular patch, and it is excited by a top-loaded probe through gap coupling. When the antenna is operated at the TM<sub>02</sub> mode of the ring patch, its radiation pattern can be changed from a uniform conical beam to a tilted beam by moving the feed point from the antenna center. The direction and directivity of the tilted beam are related to the feed position and the offset distance, respectively. Experimental results indicate that the directivity of the tilted beam is 2 dB higher than that of the original uniform conical beam, and they have good agreements with simulated results carried out with HFSS.